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from Virginia (about 1614), and therefore that it did not originate in cultivation." Since the writing of the paper, the author has had an opportunity to examine type specimens and early collections in London, and is now inclined to believe that this "first *Oenothera*" was rather the European *O. biennis*, with somewhat large flowers but shorter style. It is of further interest to note in the paper that the author regards *O. Lamarckiana* and all open-pollinated forms as hybrids and not pure races, in the sense that they have undergone crossing in nature as well as in gardens. This means that the important matter to investigate is the relation between this crossing and the phenomena of mutation. At the same time, the author does not believe that there is evidence for regarding *O. Lamarckiana* as an ordinary synthesized hybrid, produced by the crossing of such forms as *O. grandiflora* and *O. biennis*.—J. M. C.

Influence of aspect on vegetation.—From a careful study of the distribution of various plant associations and plant species on the mountain sides of southern Arizona, BLUMER[25] states as a general truth that reversion of aspect takes place with change of altitude. Various species of oak and pine furnish much of the evidence upon which this generalization is based, hence the distribution of *Quercus reticulata* upon the Santa Rita Mountains may be cited as an example. It is first found in shaded situations upon north slopes at 6000 feet, and becomes common as a tall clean coppice form at 6500 feet, spreading to the east and west slopes. At 8000 feet it is practically absent from the north side, is abundant on the east and west, and has begun to appear freely on the south side, where it continues as a chaparral growth to an altitude of 9400 feet. A similar change of aspect is exemplified in the occurrence of various other species. The factor concerned in these changes of aspect is the difference in isolation.

The species studied seem to have occupied all the space they are capable of doing, those with the widest range of variations in form and structure having, by virtue of their plasticity, the widest distribution, but even to such forms no extension of range seems possible while the present topography and climate endure.—GEO. D. FULLER.

Orchid bulbs as fungicides.—Small portions cut from the bulbous parts of certain orchids appear to have a toxic effect upon the mycorhiza of the same plants. In experimental cultures conducted by BERNARD[26] they were very fatal to the hyphae of some species of the fungi, destroying all that came in contact with the fluids diffusing from the bulbous material. Certain other species of fungi isolated from orchid roots proved more resistant, fatal effects being evident only in the presence of larger masses cut from the bulbs. Heated

[25] BLUMER, J. C., Change of aspect with altitude. Plant World **14**:236–248. 1911.

[26] BERNARD, NOEL, Sur la function fungicide des bulbes d'Ophrydées. Ann. Sci. Nat. Bot. IX. **14**:221–234. 1911.

to 55° C. the toxic properties seem to have been destroyed, which together with other data leads to the conclusion that the substance acting as a fungicide is an enzyme. It serves to explain the fact that no endophytic fungi are found in the bulbous portions of various orchids, although they are always present in the roots of the same plants, thus conforming to BERNARD'S hypothesis that these orchids are plants which tolerate the mycorhiza, while at the same time they are able to defend themselves against their complete invasion. These investigations were still in progress when they were interrupted by the death of the brilliant scientist who has contributed so largely to the understanding of the symbiosis existing between various endophytic fungi and their hosts.—GEO. D. FULLER.

Vegetation of islands and peninsulas.—From a brief study of the irregular shore line of Lake Tsala Apopka, Florida, and an examination of the literature on the vegetation of the Atlantic coastal plain, HARPER[27] finds that the peninsulas and islands are almost universally characterized by a vegetation of a climax type composed largely of broad-leaved evergreen trees, among which *Magnolia grandiflora* and *Quercus* spp. are conspicuous. This is in striking contrast with the pine forests which occupy the adjacent mainland. Several possible hypotheses in explanation of this phenomenon are examined and rejected, as fire seems to the investigator to afford an adequate key to the situation. Fires would doubtless be of much less frequent occurrence upon islands and peninsulas than upon the more continuous mainland, and this circumstance would permit a more rapid advance toward mesophytism, but it seems possible that differences of soil moisture and evaporation due to the proximity of considerable bodies of water and to the slight elevation of the islands and peninsulas above their surface may have been at least secondary factors in hastening the development of the climax vegetation.—GEO. D. FULLER.

Phylogeny of algae.—BRUNTHALER[28] has discussed the phylogeny of algae, based upon results he obtained from culture experiments and those obtained by ENGELMANN, OLTMANNS, STAHL, PÜTTER, and others. A brief summary of his conclusions is as follows: (1) The chromophyll and chlorophyll of Rhodophyceae, Phaeophyceae, Zygophytae (including Peridinales, Bacillariales, and Conjugales), are the result of adaptation to light intensity since these forms first appeared. (2) The modern Flagellatae are end structures from the oldest organisms, but the direct relationship of the modern flagellates with these ancient organisms cannot be demonstrated. (3) The Rhodophyceae are to be regarded as phylogenetically the oldest group of algae, and their ancestors have come from the primitive forms of flagellates. (4) The Phaeo-

[27] HARPER, ROLAND M., The relation of climax vegetation to islands and peninsulas. Bull. Torr. Bot. Club **38**:515–525. 1911.

[28] BRUNTHALER, JOSEF, Zur Phylogenie der Algae. Biol. Centralbl. **31**:225–236. 1911.